

# Tof\_E calibration

Last year, I did Tof\_E calibration by estimating the following.

- Global offset
- Slat by slat offset
- Run by run offset

I used CWG nDST files in rcas disks. (807 run).

The detail is

[http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run07\\_Au.html](http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run07_Au.html)

I did calibration again to improve the resolution using the high statistics because I had not used the analysis train in the previous calibration.

Therefore, I did it again using the offset,

->For calibrated runs, I estimated slat by slat offset and run by run offset .

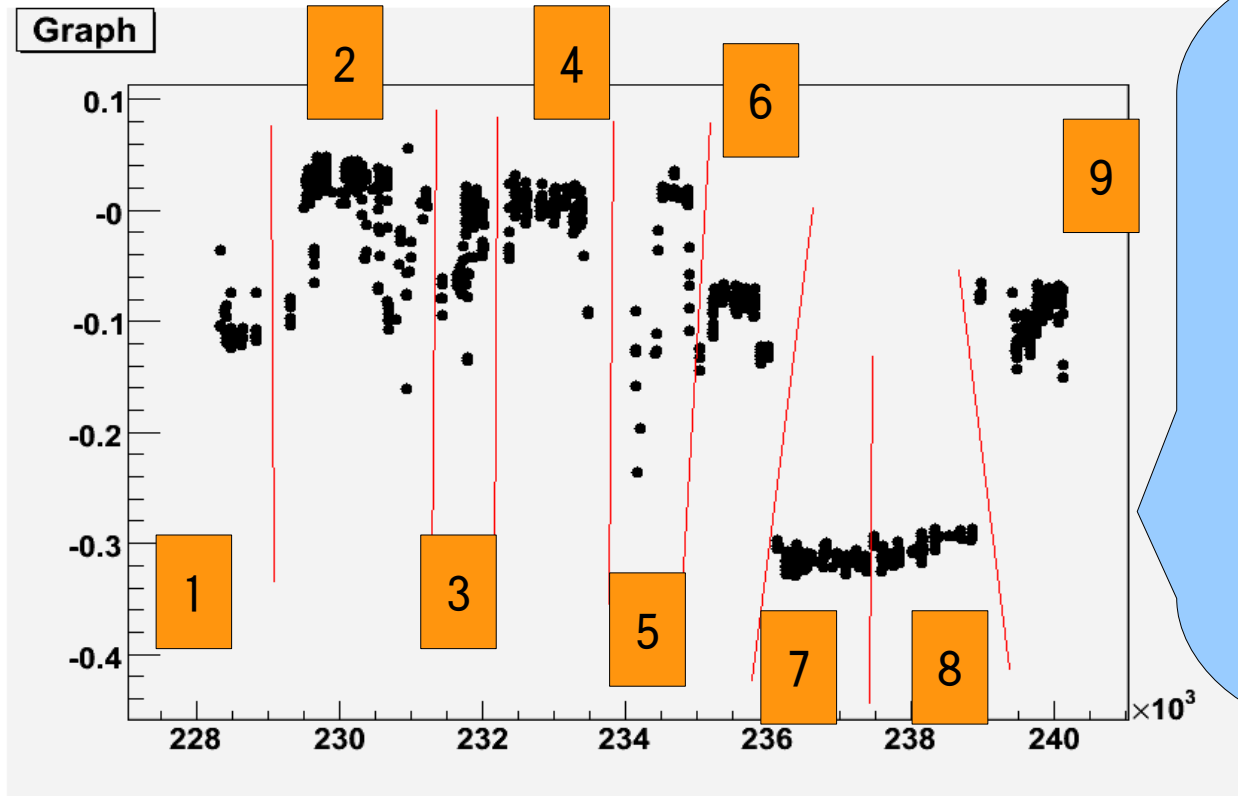
For no calibrated runs, I estimated global offset ,slat by slat offset and run by run offset .

However ,timing resolution hardly changed .

So, timing resolution doesn't change no matter how past way is done.

When I estimated slat by slat offset ,I used nDST files were merged in all run numbers Up to now.

But...



X-axis is run ID,Y-axis is run by run offset.

It used global offset and slat by slat offset .

It did not use run by run offset.

In this picture, You can see that run by run offset sometimes changes greatly.

Maybe, the Changing in setting  
(e.g. Changing Magnetic field )is cause of it.

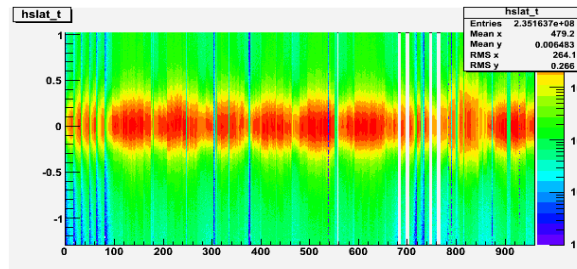
So,as shown in the figure,I divided runs into 9 groups.  
Then the slat by slat offsets are estimated in each group.  
But...

These figures show group5 as an example of each groups.

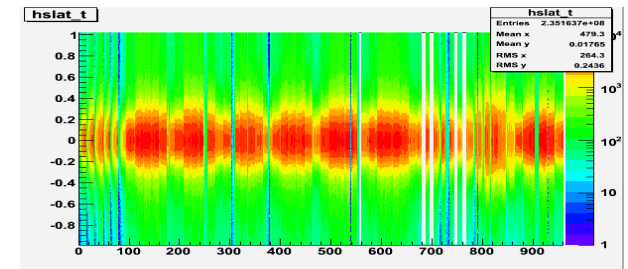
before

after

X-Axis  $\rightarrow$  slat ID  
Y-Axis  $\rightarrow$  ttof - t(Pion)

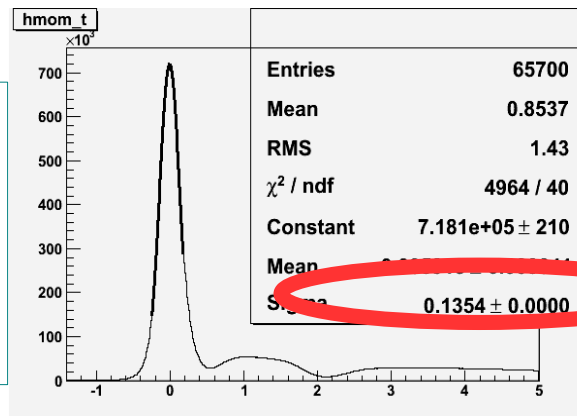


Picture1

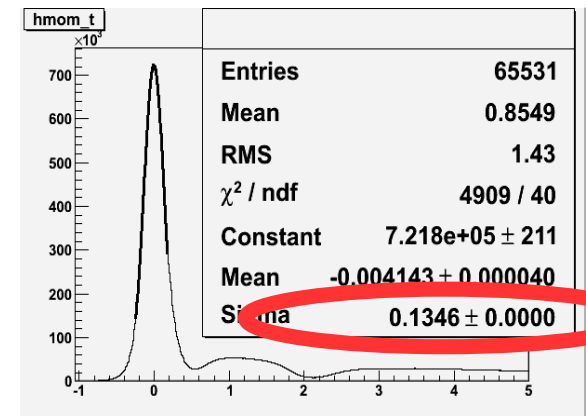


Picture2

Histogram of  
( ttof - t(pion) )



Picture3



Picture4

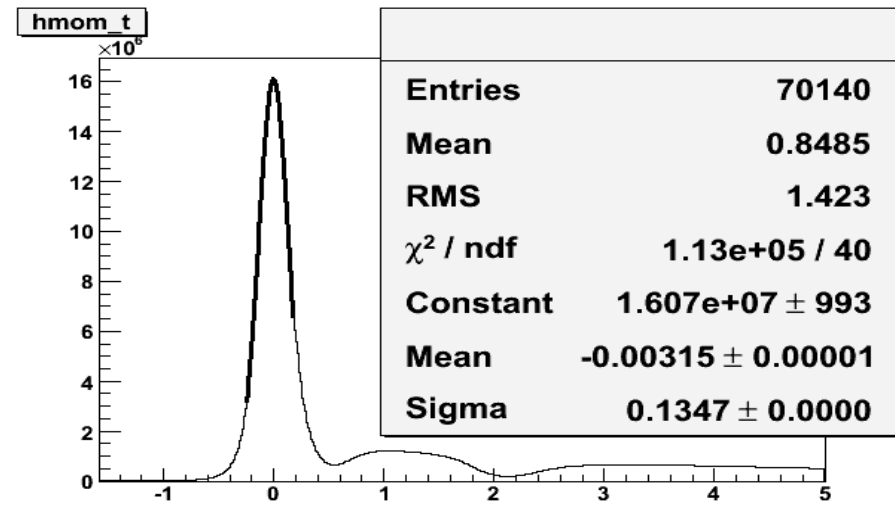
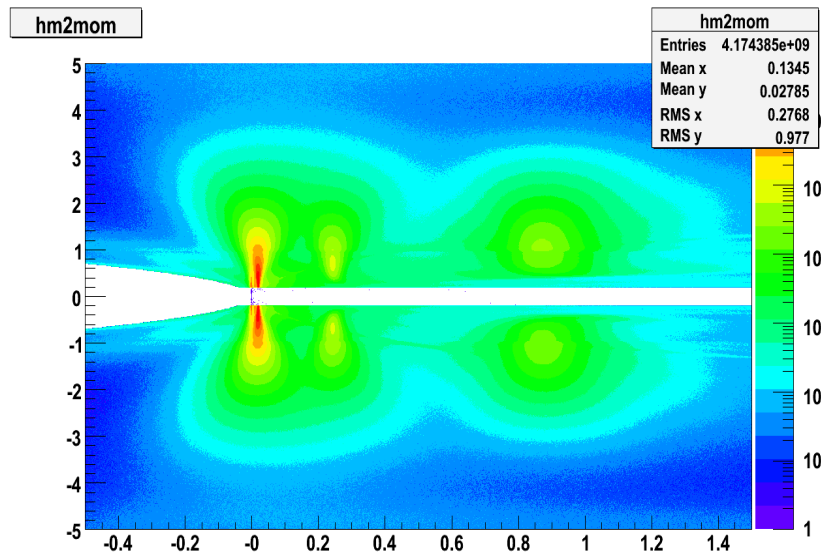
Picture1 and picture2 do not change very much, because these use slat - by -slat of all runs .

And, you can see that timing resolution became a little good.

I did the same thing in the other groups.

In these, timing resolution became a little good likewise.

And ,I merged these.



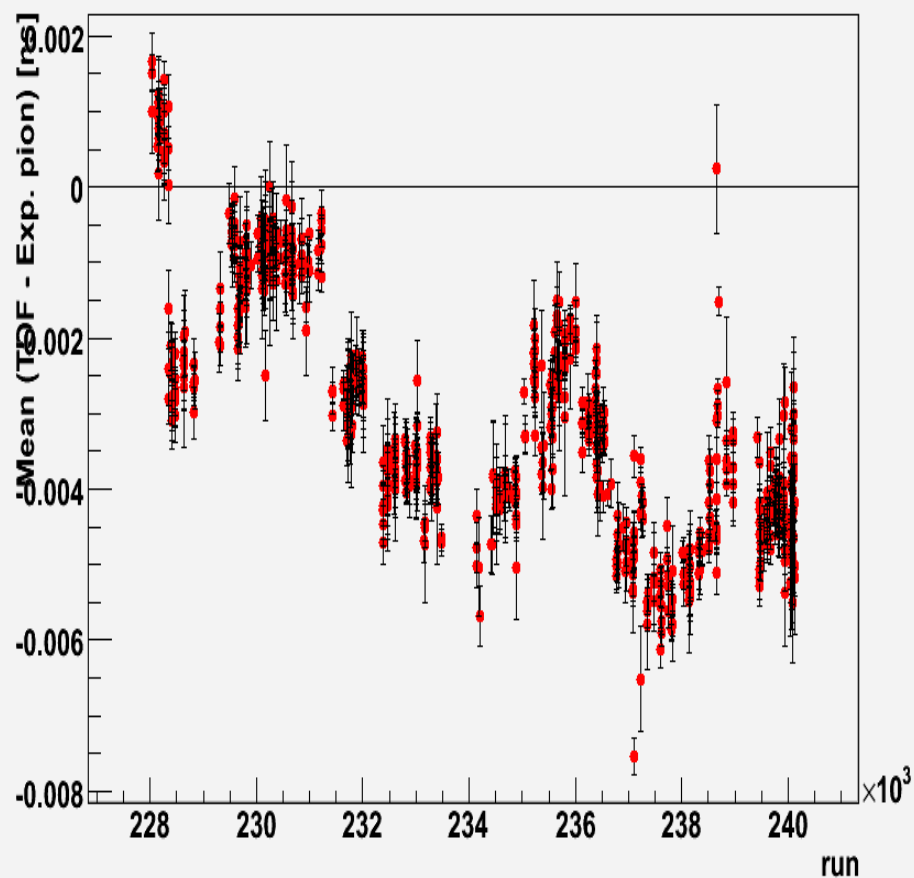
(left) X-Axis is mass square. Y-Axis is momentum.

You can see strange around 1GeV/c. The reason is that runs don't have less than 1GeV/c exist.

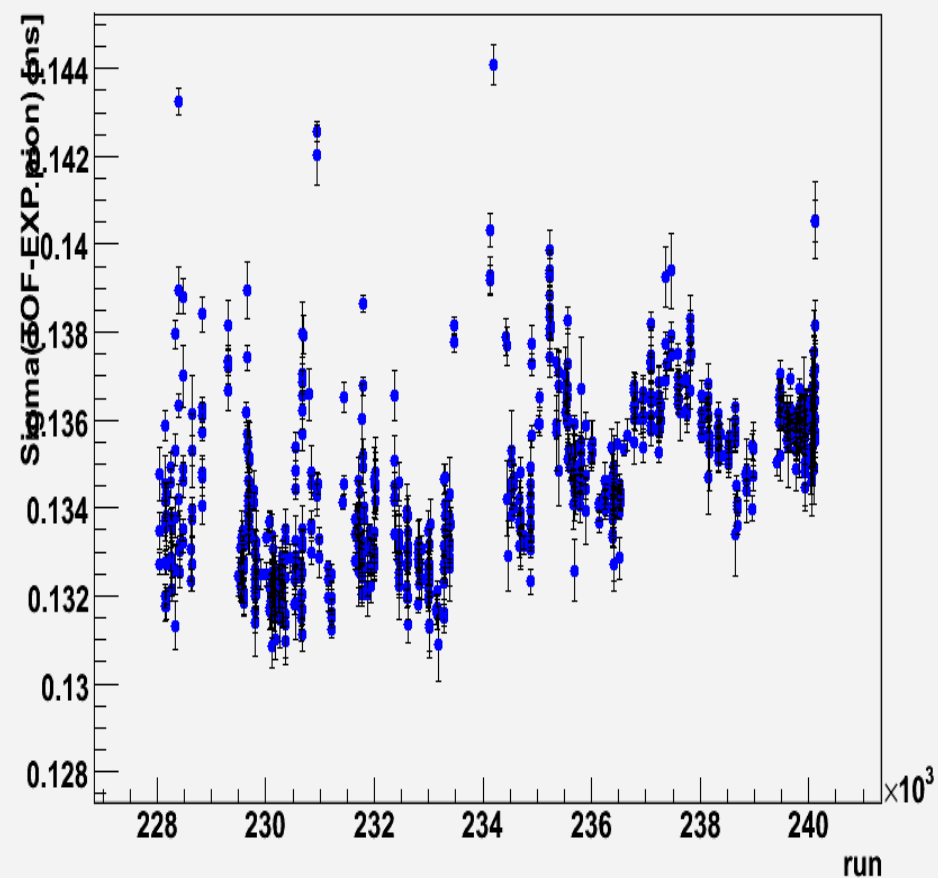
(right) histogram of  $t_{\text{tof}} - t(\text{pion})$ .

You can see that timing resolution is 135ps.

Mean (TOF - Exp. pion) vs. run



Graph



(left) runID vs mean  
(right) runID vs sigma

# summary

(last year) global ,slat by slat,run by run offset -> using files of rcas disks



calibration again -> using train.  
But there were not many changes.



I divided run into 9 groups.  
And, in each groups, I estimated slat by slat offset

# list

Calibrated runlist is

[http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run7\\_AuAu/list\\_9\\_72008/all\\_list.txt](http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run7_AuAu/list_9_72008/all_list.txt)

Group list (1 – 9) is

[http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run7\\_AuAu/list\\_9\\_72008/group/](http://www.phenix.bnl.gov/WWW/tof/offline/calibration/run7_AuAu/list_9_72008/group/)

# cut

- `quality==31 || quality==63`
- `fabs(zed)<75.0`
- `the0>-100`
- `Etof>0.0`
- `fabs(BbcZVertex) < 30.0`
- `BbcMultN > 0 && BbcMultS > 0`
- `BbcChargeN > 0 && BbcChargeS > 0`
- Matching cut  $\rightarrow$  `tofs < 2.0 sigma`

(tofs is calculated by `tofdphi` and `tofdz`)